(This trouble shooting is also applicable to the multiplication section of the 4000)

I Machine makes one stroke too many

See point 1 to 6 and point 51.

II Machine makes one stroke too few

See point 3, 7 to 13 and X below.

III Mult. Key does not return

See point 14 to 16 and point 53.

IV Double 0-step

See points 17 to 19.

V The wrong multiplier digit is printed (e.g. 0 instead of 9 or) (e.g. 1 instead of 8)

See points 20 to 23.

VI The wrong multiplier digit is printed (e.g. 8 instead of 7 or) (e.g. 7 instead of 6)

See points 21, 24 to 26 and point 29.

VII Total Group returns too early

See points 27 to 35 and Section 32M-3000, page 12, point 34.

VIII Miscalculation

See points 36 to 39.

IX Miscalculation at Credit Total

See points 40 to 46.

X Crossing Stroke fails

See points 47 to 52 and II above.

XI Complementary Number

See points 54 and 55.

XII First item after 2nd register Total enters only partially

See point 56.

XIII Poor Multiplier Print (half digits)

See point 57.

XIV Outer Totalizer Coupling distorted at 1st Register Total

See point 58.

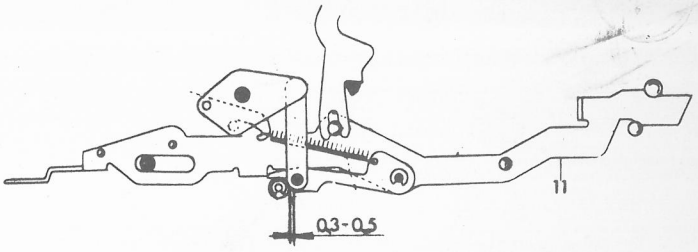
XV Machine jammed

See points 59 to 61.

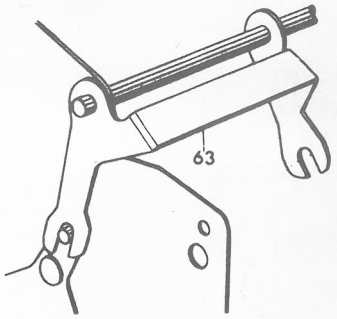
N.B. x)165 = Catalogue page for model 3341-3541.

Check:

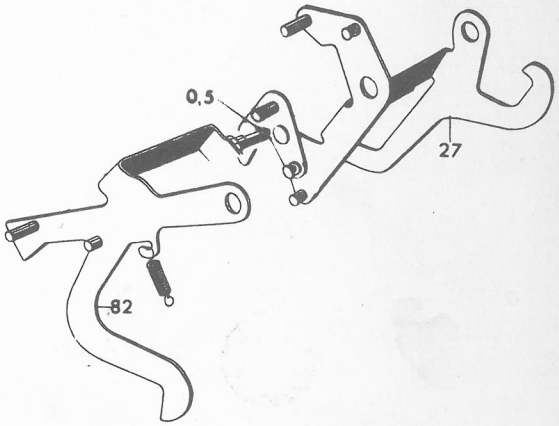
1. that the Universal Slide (165x/11) is restored with an overtravel of .3 to .5 mm.



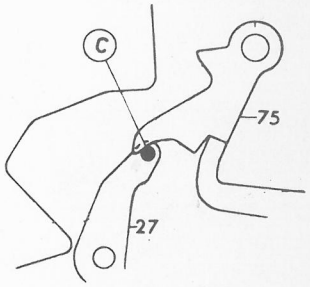
2. that the Key Locking Bridge (160/63) is not distorted.



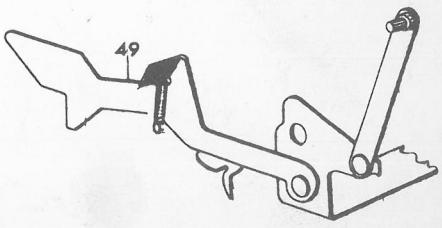
3. that there is a play of .5 mm between the stud of the Start Initiator (160/82) and the rocker of the Start Keeping Bridge (163/27).



4. that the stud (C) of the Start Keeping Bridge (163/27) is under the Detent (161/75).



5. that the spring of the Restoring Lever (163/49) has sufficient tension.



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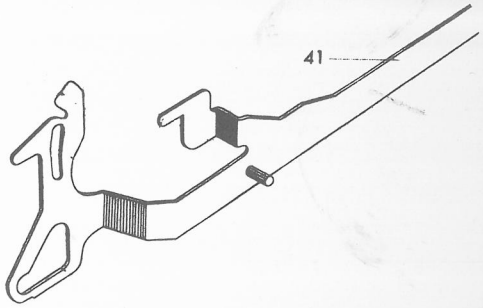
TROUBLE SHOOTING

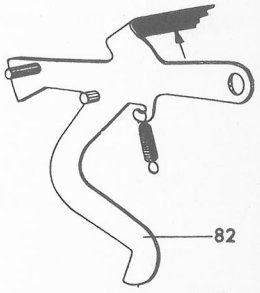
Class 3000

Check:

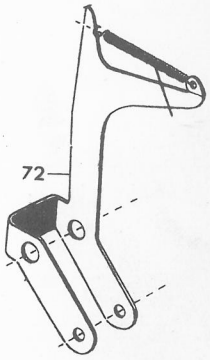
6. that the Crossing Stroke Lever (165/41) does not rub against the Spring (164/106) of the Lifting Arm Dog Actuator or the base plate.



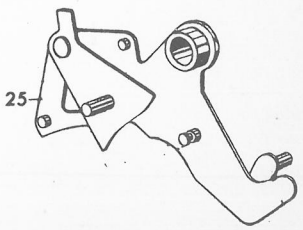
7. that the Start Initiator (160/82) is not obviously worn.



8. that the Stroke Selector Bridge (160/72) is straight and has the right spring (2192227) installed (refer to Section 32M-3000, point 6).



9. that the Stroke Selector (160/25) moves without bind.



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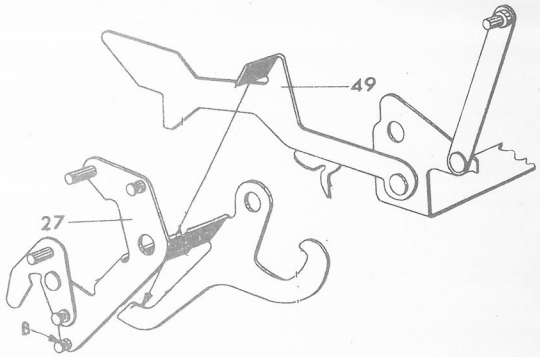
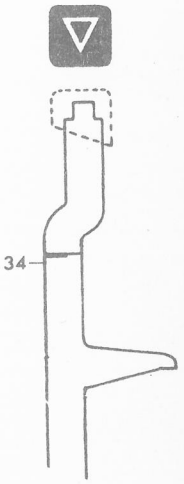
Check:

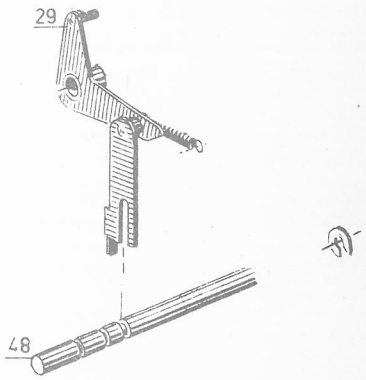
10. that the Start Keeping Bridge (163/27) has a secure hold on the Restoring Lever (163/49). Should adjustment be required, form the right hand leg while supporting the Left hand leg (at B) with a screwdriver.



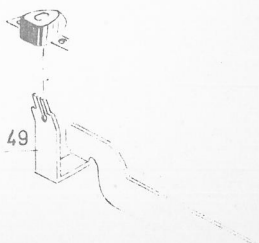
11. that the Non-Add-key (164/34) returns without bind.



12. that the Repeat Stem (163/29) fits in the groove of the shaft and that there is a retainer at the right end of the shaft (163/48).



13. that the operator has not restored the Stop Carriage by the Correction Key (156/49) during multiplication run.



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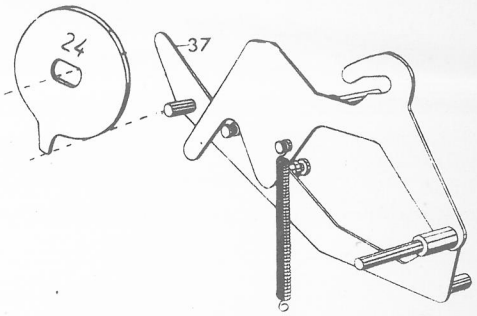
TROUBLE SHOOTING

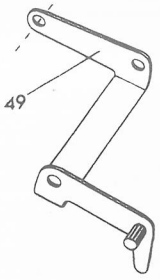
Class 3000

Check:

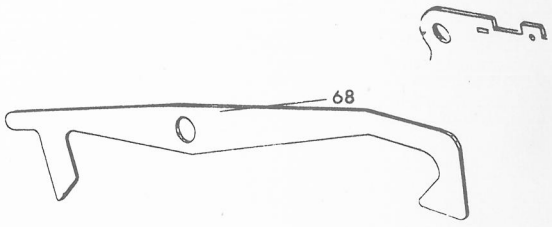
14. that there is no wear on shoulder of Cam "24" or on the stud of the lever (160/37) that is actuated by this cam.



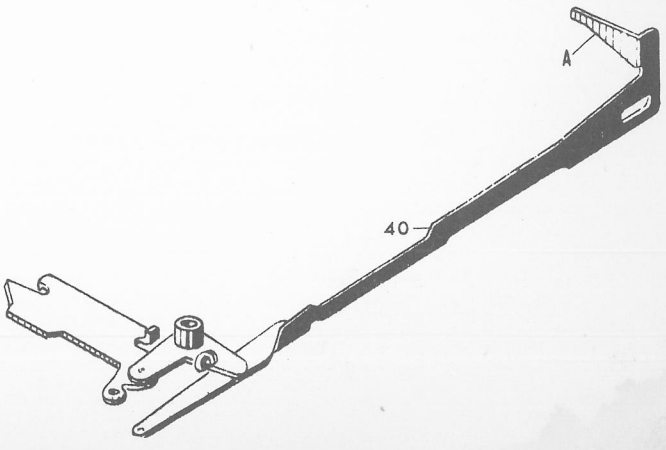
15. that there is no bind in the Non-Add-bridge (162/49).



16. that the Start Cancelling Lever (161/68) does not rub on the key board end plate.



17. that the Step-over Linkage (157/40) is so adjusted that there is a maximum amount of play to the O-hammer without hazarding the proper function. Adjust by forming the lug (A).



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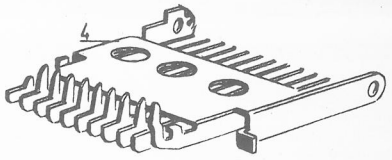
TROUBLE SHOOTING

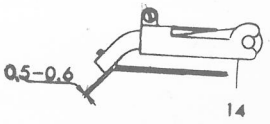
Class 3000

Check:

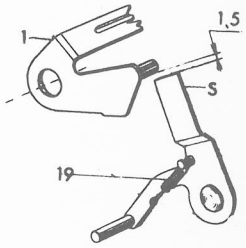
18. that the Escapement Bridge (157/4) is straight.



19. that the Restoring Hook Spring (157/14) is correctly adjusted (Section 3M, Page 8).

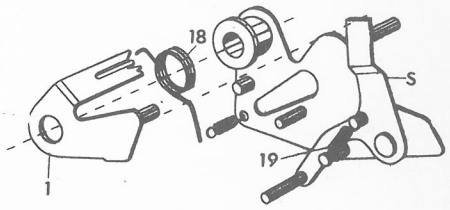


20. that the spring (160/19) of the stopping lever is the correct one, 2192020 (Section 32M-3000, point 1).



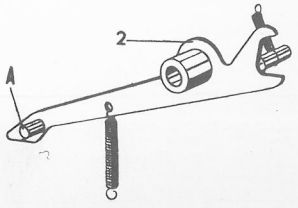
21. that the torsion spring is the correct one, 2196025 (Section 32M-3000, page 11).

22. that the stopping lever has at least 1.5 mm play to the stud of the Multiplier Setting Bridge (162/1).



23. that there is no wear on cam 22.

24. that there is no wear on the (162/2) (see Section 32M-3000, point 13, page 4).



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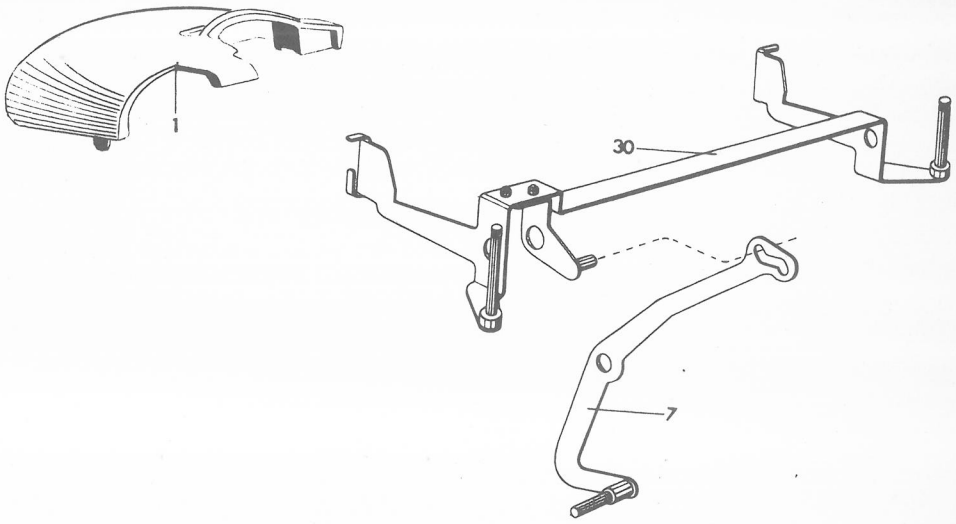
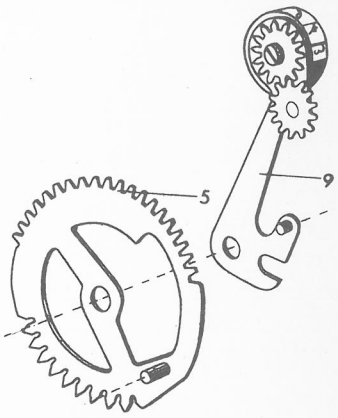
TROUBLE SHOOTING

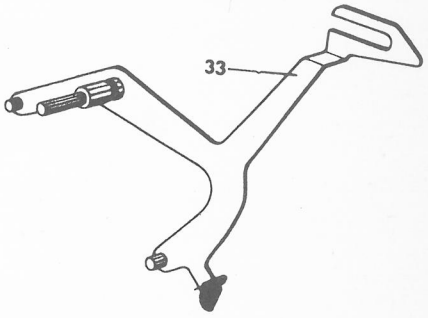
Class 3000



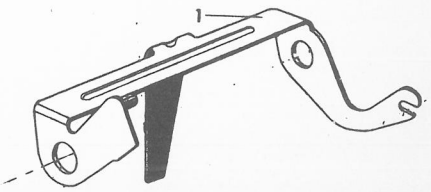
Check:

25. that the Ribbon Guide (158/30) does not rub on the Ribbon Spool Cover. Interference would be transmitted via parts(162/7, 162/5 and 162/33) to the Figure Drum (162/9) causing the wrong multiplier to be printed.





26. that the Multiplier Setting Bridge (162/1) does not bind. If it moves sluggishly, the movement of parts (162/5, -9 and -33) will not correspond to the selected multiplier digit.



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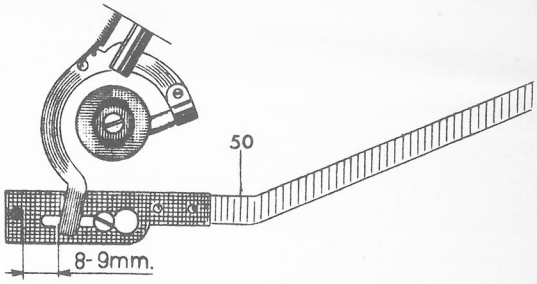
TROUBLE SHOOTING

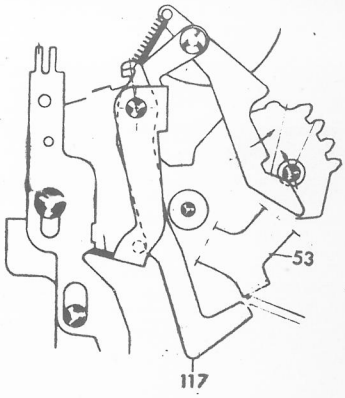
Class 3000

Check:

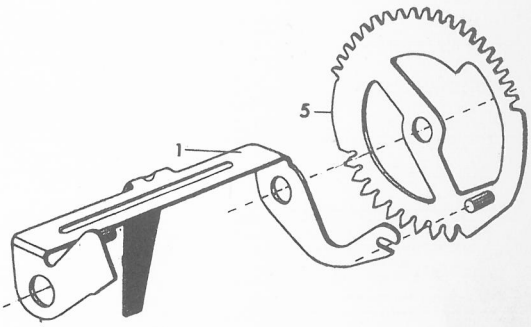
27. that the Governor Link (162/50) is free of bind.



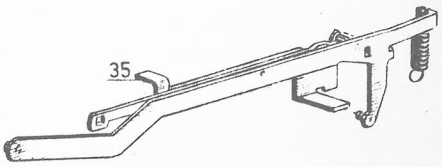
28. that there is a little amount of play between the Latch (164/117) and the Addition Key Lever (165/53) when the Total Group is raised.



29. that the notch of the Multiplier Setting Bridge (162/1) engages on the stud of the Multiplier Segment.



30. that the Sector Latch (157/35) moves without bind. It must not rub on or be pressed against the Key stem guide.



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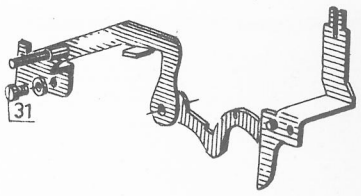
TROUBLE SHOOTING

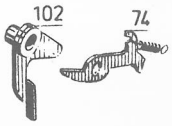
Class 3000

Check:

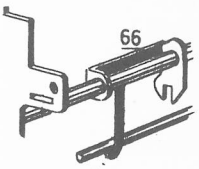
31. that the Screw (163/31) is tight.



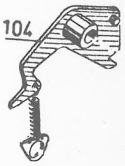
32. that the Sub-Total Dog (164/74) is under the stud of the Sub-Total Dog Actuator (164/102).



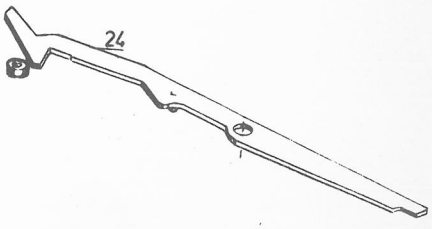
33. that the Locking Bridge (162/66) touches the shaft only lightly when the Universal Slide is farthest to the rear (in restoring).



34. that the Lifting Arm Dog Actuator (164/104) is of the new type.



35. that the Stop Carriage Restoring Lever (157/24) is released from the roller after the stop carriage has been restored.



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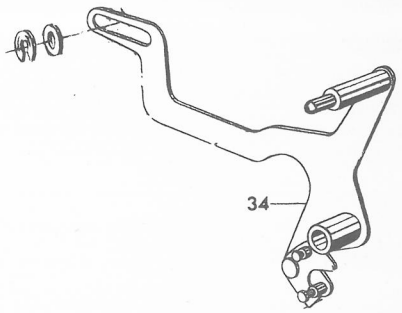
TROUBLE SHOOTING

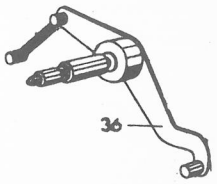
Class 3000

Check:

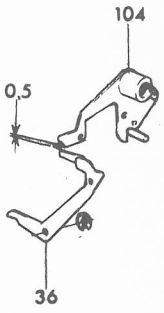
36. that there is a washer 2151068 between retainer and Free Return Lever (160/34) (See Section 32M-3000, point 11).



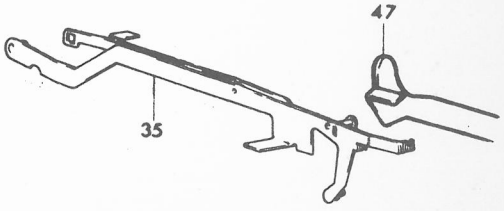
37. that spring 2192225 is on its place on the Positioning Lever (160/36).



38. that there is a play of .5 mm between the Detent (157/36) and the Lifting Arm Dog Actuator (164/104).



39. that the Delaying Link (166/47) lifts the Sector Latch (157/35) sufficiently high to allow the Sector Arms to pass freely.



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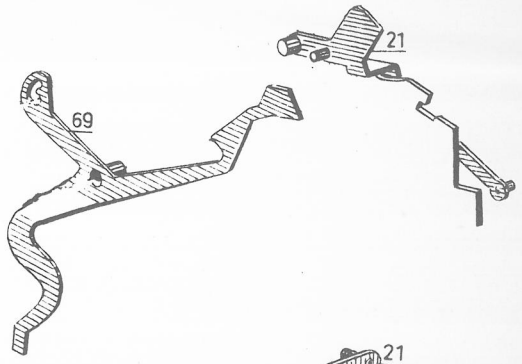
TROUBLE SHOOTING

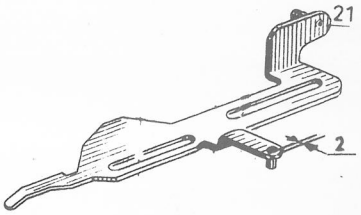
Class 3000

Check:

40. that the Cut-out Lever (162/69) does not press on the stud of the Paper Feed Disengaging Lever (163/21).

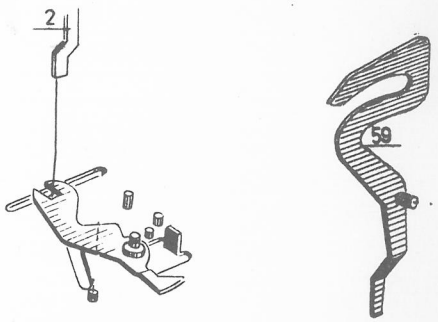


41. that the Four Stroke Slide (168/21) is of the modified type, i.e. with the stud 2 mm from the edge. Should replacement be required but not possible, adjust the lug where the stud is located.

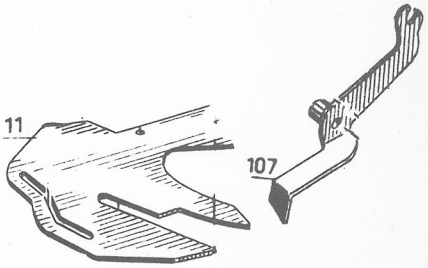


42. that the Credit Signal (168/2) does not bind.

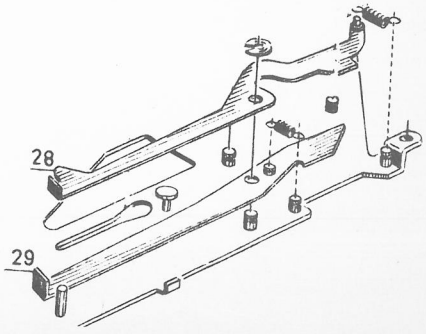
43. that the Total Starting Lever (164/59) does not press on the stud of the Total Key.



44. that the Aut. Sub-Total Lever (164/107) does not press on the Four Stroke Segment (168/11).



45. that the Trip Pawls (168/28 and 29) have free movement.



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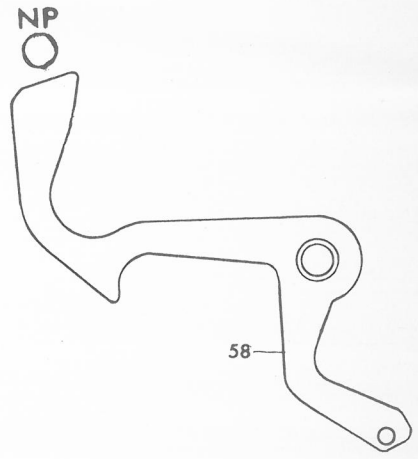
TROUBLE SHOOTING

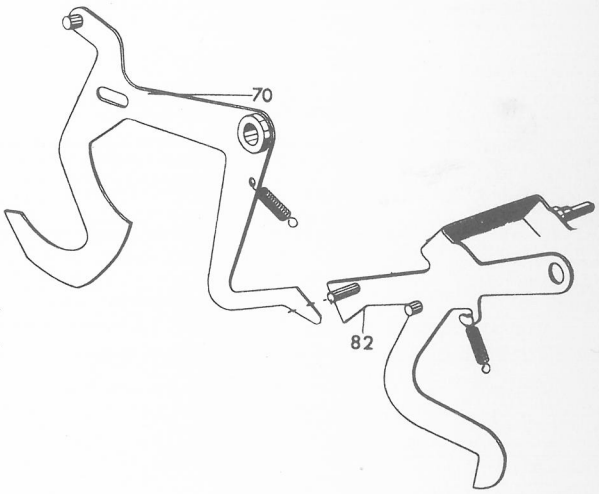
Class 3000

Check:

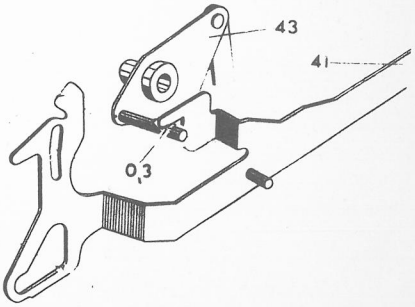
46. that the Non Print Bell Crank (162/58) does not press on the stud of the Non Print Bridge.



47. that the stud of the Start Initiator (160/82) is above the foot of the One Turn Coupling (160/70).



48. that there is a play of .3 mm between the lug of the Crossing Stroke Lever (165/41) and the stud of the Start Lever (164/43).



Printed in Sweden

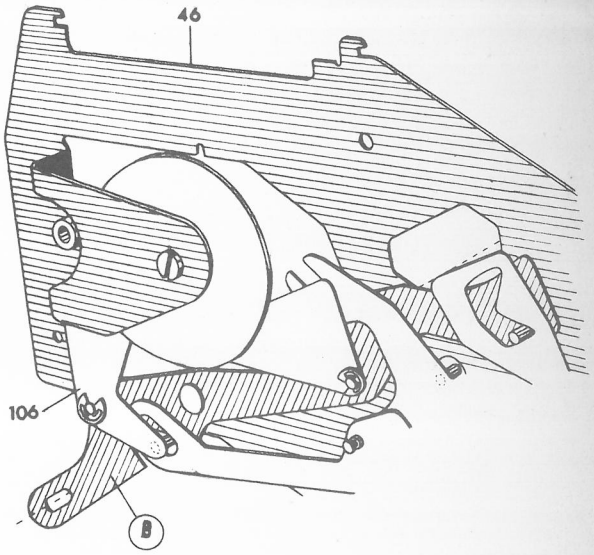
TROUBLE SHOOTING

Class 3000

Check:

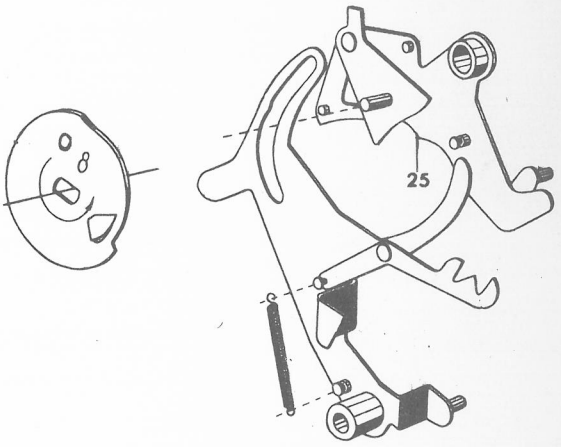
49. that the Minus Rocker (160/106) does not bind on the Outer Frame Plate (160/46).

50. that the Rocker Carrier (B) does not bind.



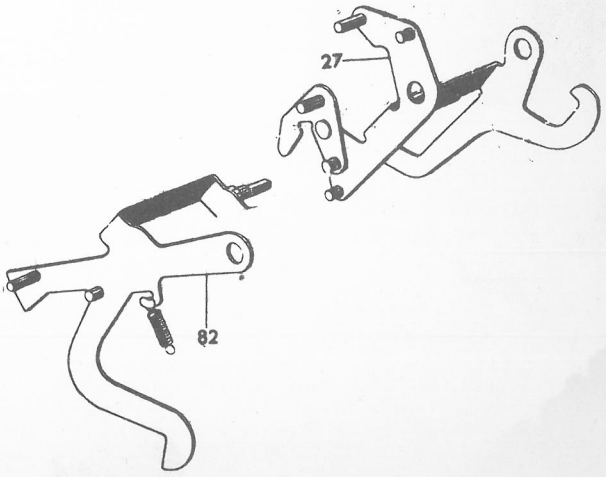
51. that the stud of the Cam "8" is not worn.

52. that the Stroke Selector (160/25) moves freely.



53. that the operator does not lock machine through forcing down the keys before previous function is completed. Release machine by Non Add key.

that the Start Keeping Bridge (163/27) and the Start Initiator (160/82) moves without bind.

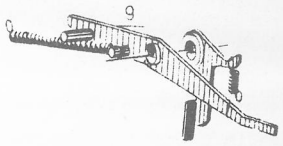


TROUBLE SHOOTING

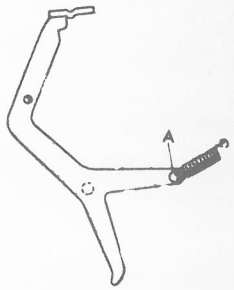
Class 3000

Check:

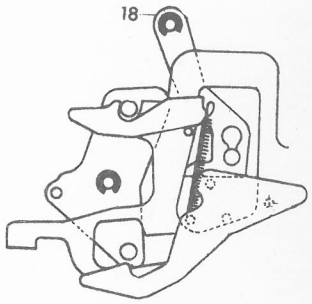
54. that the Subtraction Lock (163/9) has correct spring tension.



55. that the Credit Signal comes fully forward. Position can be adjusted by careful forming of the spring post (A).

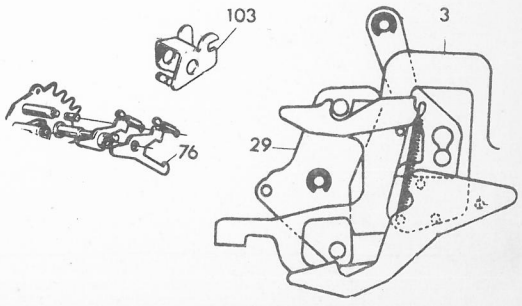


56. that the Disengaging Slide (164/18) did not stay down upon latest 2nd Register Total.



57. that the bearing of the Type Wheel (162/8) is well lubricated.

58. that the G.T. Dog (164/76) has not come under the Selector Bridge (164/103). This would be possible if the (164/76) has excessive play. The consequence will be that both outer and inner Totalizer Couplings (165/3) are lifted at the same time and the outer coupling seizes both upper and lower studs.



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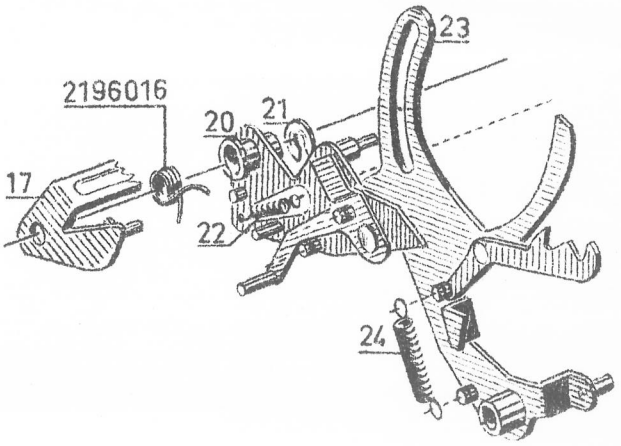


32. The wrong Multiplier will be printed if the Multiplier Setting Bridge (17) does not closely follow the Connecting Lever (20) when this moves into working position.

Should you have trouble in this respect you are advised to replace the torsion spring by 2196016 which is stronger.

The new spring is found in machines after the following Serial Numbers:

3341 from 106474
3541 from 105552 (578 to 602 and 721 to 733 are exceptions)

We suggest you make it a rule to install the new spring when overhauling machines of an earlier date.

2196016 is supplied for replacement free of charge until the end of 1961.

MULTIPLICATION, 3000-CLASS

Modifications

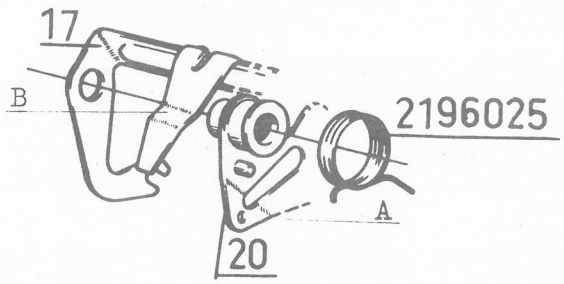
32. Reduced Load on Cam 22 (Class 3000 and 4000)

To reduce load and wear on cam 22 we have made these two changes:
A. Twist Spring 2196025 replaces earlier variants. To accomodate this spring we had to make a wider hub for the Connecting Lever (20). The modified connecting lever is easily identified by the bend at "A".

The modification is in production as follows:

Model 3541 from Serial Number 113275
4541 from 120919

Only modified parts are delivered as spare parts.



B. Multiplier Setting Bridge (17) has got its restoring tongue modified. The offset bend at "B" also reduces the load on the roller spigot of the Intermediate Lever. Only new style multiplier setting bridges are delivered as spare parts.

In productions as follows

3341 - 109913
3541 - 113428
4341 - 121064
4341 - 123011 (with aut. zero completion)
4541 - 121359
4541 - 122018 (with aut. zero completion)

(Automatic zero completion is found in machines after the following serial numbers 4341-123000, 4541-122000).

The modified parts (2196025 + K28128 + K28196) will be delivered for replacement free of charge during 1962.

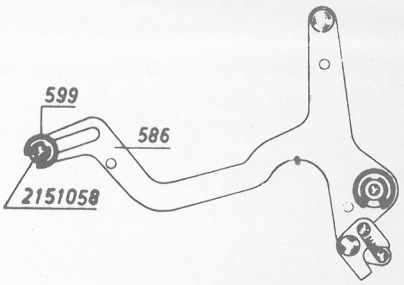
This page supersedes Section 32M-3000, Page 11, Jan. 1961

Printed in Sweden

MULTIPLICATION, 3000-CLASS

Modifications

33. Replacement of Washer (class 3000 and 4000)



The washer 2151068 as specified in the Parts Catalogue for use between parts K28055 and K28051 has come down in the slot in a number of machines. Therefore, we are now using Washer 2151058 on this point. The change was made in Production in June 1962 and you are advised to change washer at convenience.

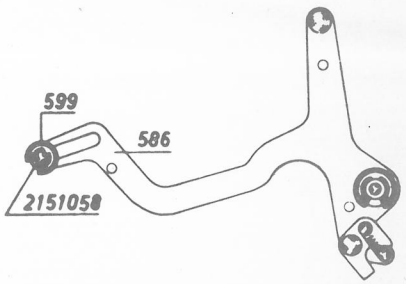
Printed in Sweden

MULTIPLICATION, 3000-CLASS

Modifications

33. Replacement of Washer (class 3000 and 4000)

The washer 2151068 as specified in the Parts Catalogue for use between parts K28055 and K28051 has come down in the slot in a number of machines. Therefore, we are now using Washer 2151058 on this point. The change was made in Production in June 1962 and you are advised to change washer at convenience.



34. Non Print Claw modified (class 3000 and 4000)

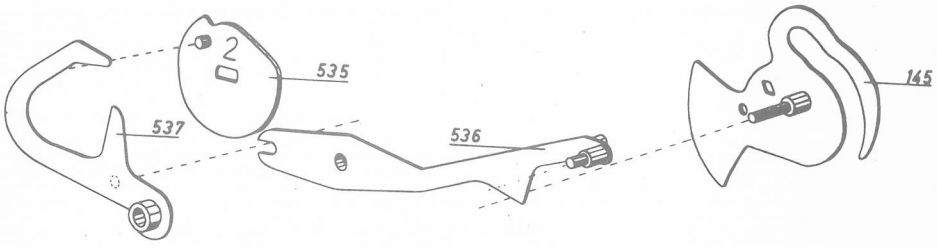
The contour of the Non Print Claw (537) has been changed to ensure sufficient over-travel of the Release Cam (145). Lack of over-travel (after-play) would prevent the Total Group on the Right hand side from latching during Total. The Release Cam would not stay in position to keep the Trap Door of the Stop Carriage (Pin Box) down, and the Sector Arms would get distorted, blocking the machine.

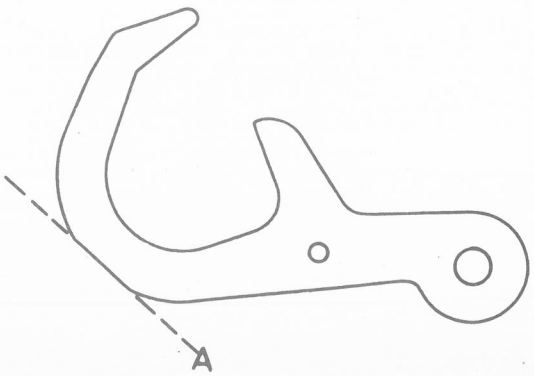
File Non Print Claw (537) as indicated by dotted line (A) or order new part from stores.

The modification is in production as follows:

3341	from 112259	3541	from 114342
4341	" 124877	4541	" 125288

N.B. The above adjustment will also improve poor line spacing during Total and Sub-Total.





Please change last line on Page 11 to "free of charge until May 1963"

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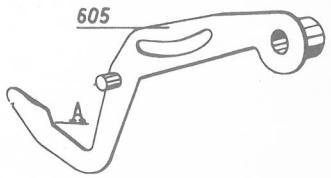
This page supersedes Section 32M-3000, Page 12, November 1962

MULTIPLICATION, 3000-CLASS

Modifications

35. Non Add Setting Lever K28302 (3000- and 4000-class

The contour of the NA Setting Lever has been changed (at "A") to facilitate release from the Non Add Bridge Stud. Before the change, it might happen that the 0-multiplication key stayed down, blocking the machine after the stroke. The change is only visible at direct comparison of different parts, but new style NA setting levers are installed after the following serial numbers:



3341 - 109913
3541 - 113388
4341 - 121039
4541 - 122013

Replace part if machine gives trouble. Replacement is supplied free of charge against machine number.

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